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The Ohio State University

THE EFFECTS OF ATMOSPHERIC WATER VAPOR ON

INFRARED PROPAGATION

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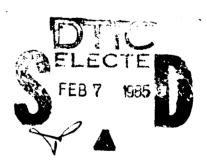
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The goal of this project was to obtain experimental water vapor absorption data using a long path absorption cell. One experiment used a frequency doubled CO₂ laser source to obtain data at specific frequencies near 5.3 up. The second experiment collected high resolution (.06 cm⁻¹) Fourier transform spectra over the 500-5000 cm⁻¹ band for pure and nitrogen broadened samples. It was planned to use these data to improve the far-wing line shape model first proposed by Nordstrom and Thomas [5].

The FTS spectra were completed and analyzed. They are submitted in two volumes as Reports 713774-3 [3] and 713774-4 [4] with the same issue date as this report.

The laser transmittance experiments were less successful. They were described in Report 713774-2 [2]. As explained in the conclusion of this report, the data had too much uncertainty to permit analysis in terms of line shape variations. The data is useful however, for those interested in transmittance in the 5 µm band.

A list of the reports produced during this study are given in the references [1-4].

Finally, we would like to call attention to a recent report [6] which has presented a comparison of 8-12 µm water continuum measurements. It includes some comments concerning the Ohio State University work.

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